Preprints.ru | Published: 15 April 2026 | DOI: 10.24108/preprints-3114943

The presumed functional purpose and likely fabrication method of the Sabu Disk

Rostislav V. Lapshin

Kurchatov Institute
1 Academician Kurchatov Sq., Moscow 123182, Russia

e-mail: rlapshin@gmail.com

A hypothesis has been put forward regarding the functional purpose of the known ancient Egyptian artifact – the Sabu Disk. According to the proposed hypothesis, similar disks were used in ancient Egypt in “talking” statues as sound sources. The sounds produced resembled human speech – something like indistinct muttering. The Sabu Disk, in the form of a distinctive headdress, was placed on the head of the deity's speaking statue. The disk was secured by means of a bushing fitted over the tenon protruding from the parietal region of the statue’s head. The wind, blowing over this headdress, induced mechanical vibrations in the three tongues – the curved petals of the disk. When combined, the sound vibrations of these tongues (voices) produced beats. The resulting sound was filtered and amplified inside the resonator cavity formed by the disk’s dome and the parietal surface of the statue’s head; after which it was directed down toward the base of the statue in a diverging cone. The article also proposes the most technologically plausible methods for producing such “stone” disks.

Key words: Sabu Disk, talking statues, Ancient Egypt, beats, sound resonator, artificial stone

Copyright © 2026 R. V. Lapshin, published under Creative Commons Attribution

1. Introduction

Photo. 1 shows a “mysterious” disk of unknown purpose, discovered in Saqqara in 1936.[1] The disk was found in the tomb of a high-ranking official named Sabu. The disk was discovered in a damaged state; its present appearance is the result of the restorers gluing several fragments back together. Over the time that has passed since its discovery, numerous hypotheses have been put forward regarding what this object actually was and what it was used for.

Some believe that the Sabu Disk is simply a vase or a lamp of unusual design; others see in it a turbine wheel; some have decided that the disk was used for stirring beer wort; while for others, the strange appearance of the disk has evoked associations with the helm of an alien starship, and so on. So far, none of the suggested hypotheses has been recognized as satisfactory. The proposed devices turn out to be functionally inefficient, while the stone material of the disk, due to its fragility and other properties, is generally unsuitable for the intended purpose. Furthermore, intense debates continue regarding the method by which the stone Sabu Disk was fabricated.

2. An unusual headdress with a hidden capability

Let us now mentally place the Sabu Disk (see Photo. 1) onto the round tenon on the head of Nefertiti shown in Photo. 2. The great “mystery” of this disk has been stirring the minds of Egyptologists and the interested public around the world for many decades. During the virtual fitting, we will assume that the diameter of the tenon on the head matches the inner diameter (8 cm) of the mounting bushing hole of the disk.

The result of the fitting is shown in Fig. 1 (the disk image is scaled down relative to the head; a 3D model[2] was used as the disk image). Does this remind the reader of anything? A similar object crowns the head of the statue of Christ on the facade of St Peter’s Basilica in the Vatican

Photo. 1. Sabu Disk, Egyptian Museum, Cairo. Diameter: 61 cm; height: 10.6 cm; inner diameter of the bushing: 8 cm. Material: metasiltstone. Ninety years have passed since the discovery of this “mysterious” artifact, yet no mortal has seen the reverse side of this disk. Photo from wikimedia.org.

(see Photo. 3). The only difference is that the nimbus of the statue of Christ has four rays (spokes) forming an equilateral cross, and it has no bent “petals”.

3. Proposed purpose

As for the functional purpose of the disk, the following application suggests itself. As the wind blew over the three bent petals (tongues) of the Sabu Disk in the horizontal plane, it induced mechanical vibrations in them. As a result, sounds resembling speech or muttering were produced.[a] The inner volume of the “hat”, together with the parietal surface of the head, functioned as an acoustic filter-resonator. The muttering sound, filtered and amplified by the resonator, was directed down toward the base of the statue of some deity, where crowds of enthusiastic believers were gathered. The three petal-tongues, positioned at 120° angles to one another, are intended to reduce the dependence of the muttering sound on wind direction. In other words, the muttering sound was not supposed to change noticeably if the wind direction changed randomly.

The resonant frequencies of the three tongues (voices), judging by the closeness of their sizes and shapes, did not differ greatly from one another and, when superimposed, produced beats (noticeable periodic changes in amplitude). The sound sources – the tongues – are located near the center of the disk but are significantly distant from its focus f, which lies approximately at a distance of $f=(d^2+4h^2)/h/8=49.2$ cm (where $d=61$ cm is the disk diameter and $h=10.6$ cm is the disk height) from the apex of the disk (it is assumed that the surface of the disk is close to a sphere).

Thus, the sound, reflecting from the sphere-like surface of the disk, was directed downward around the statue in the form of a diverging cone. To translate the “divine” muttering into a lan-

[a] The idea of using the Sabu Disk as a headdress that produces sounds resembling human speech when exposed to the wind was first proposed in the author's book “Peruvian polygonal masonry: how, who, when and what for” (148 pp., 2025).

 Copyright © 2026 R. V. Lapshin, published under CC BY

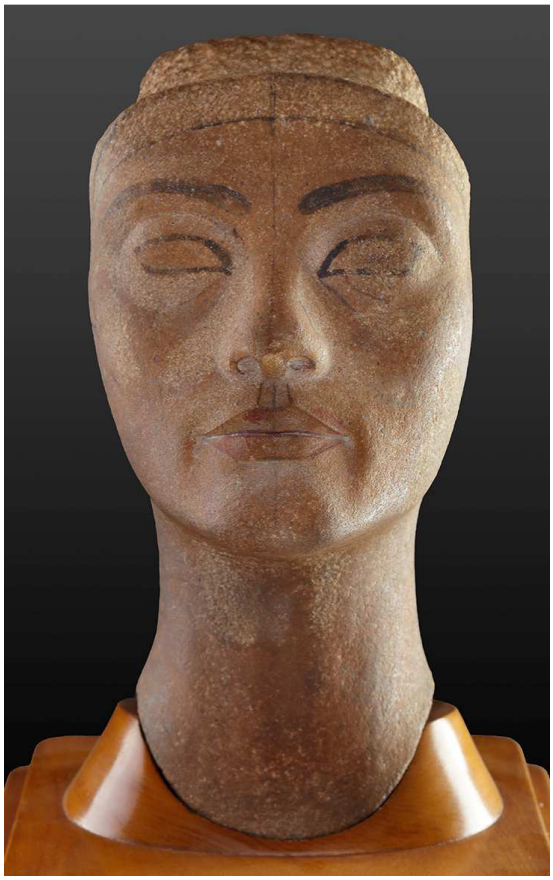

Photo. 2. Unfinished head of Nefertiti, Egyptian Museum, Cairo. Height: 35.5 cm. Material: quartzite. Composite sculpture. An upper part in the form of a wig or headdress was to be mounted on the round tenon. Photo from egyptianmuseumcairo.eg.

guage understandable to people, specially trained temple personnel were engaged, and their labors were generously rewarded. To enhance both the physical effect and the emotional impact, the head of the talking statue could emit sounds through its open mouth, which, by means of an internal tubular cavity acting as a sound guide, communicated with an opening in the parietal region of the head.

Of course, the fake Nefertiti bust[3] is used here only as a model to demonstrate the idea. The real “talking” statue, which had this thing on its head, was different. Its head was noticeably larger, and the tenon fitted precisely (with a slight interference fit) into the opening of the disk bushing. It should come as no surprise if one day such a statue is miraculously discovered by some tireless archaeologist.

4. Possible fabrication methods

As for the technology of fabricating the Sabu Disk, of course, the disk was not carved from a single piece of natural stone, as some hotheads believe. If the mixture intended for preparing the artificial stone was similar in its properties to clay – that is, it lent itself well to modeling – then the initial shaping of the disk in the form of a vessel, which included a spherical base (dome-reflector), a through mounting bushing, and a vertical wall with petals that had not yet been cut out, was apparently performed on a potter’s wheel.

The subsequent forming process – cutting out the petals, bending them, rolling and drawing them out on a mandrel, and attaching the hoop – resulted in noticeable deformations of the initially regular shape of the disk's main body, which had been formed on the potter’s wheel. If, on the other hand, the mixture was more of a fluid liquid, then the disk was cast using a collapsible mold. In the latter case, the creation of a clay model for the casting mold could be carried out using a potter’s wheel and the transformations described above.

Copyright © 2026 R. V. Lapshin, published under CC BY

Fig. 1. Sabu Disk virtually placed on the tenon of Nefertiti's head. A 3D model of the disk was used as its image. The size of the "hat" has been reduced relative to the size of the head.

To more precisely determine the material and the fabrication technology of the disk, more information about it is needed. Thus, for example, the curved and elongated structure of the material at the bases of the petals, where they were subjected to severe bending deformation, may indicate modeling. The modeling may also be indicated by the elongated structure of the petal material in areas where the petals were significantly stretched by rolling in the radial direction. The bending and rolling were most likely performed on a rigid mandrel of a specific shape.

If the specified structural features are detected inside the body of the disk, then the disk was modeled; whereas if they are present only on the surface, then it was cast using a sculpted model. Here, as in the case of the Nefertiti bust,[3] X-ray computed tomography method[4] would be well suited as a non-destructive method for investigating the disk.

5. Artificial obstacles to further research

Despite the fact that 90 years have passed since the discovery of the disk, there is simply no essential information about it in the public domain. What can one say when even the official website of the Egyptian Museum in Cairo[5] contains virtually no information about the disk. Surprisingly, the author was unable to find a single photograph of the backside of the "mysterious" disk. Like the Earth's natural satellite, the Moon, the mysterious Sabu Disk always presents only one of its sides to the astonished observer.

To move the study of the disk forward, the administration of the Egyptian Museum should, to begin with, photograph the disk from all sides at high resolution under good lighting. Moreover, it is also necessary to create a 3D model of the disk using non-contact optical 3D scanning method.[6] The resulting materials should be made available online for free download to anyone interested. It would also be desirable to review an expert report (if one exists at all) concerning the determination of the disk material. In particular, it would be interesting to know what the basis is for identifying metasiltstone as the disk material.

 Copyright © 2026 R. V. Lapshin, published under CC BY

Photo. 3. Statue of Christ on the facade of St Peter's Basilica in the Vatican. Photo from stpetersbasilica.info.

Unfortunately, under the current state of affairs, which seems to be deliberately maintained by the administration of the Egyptian Museum, the "riddle" of the mysterious Sabu Disk will never be resolved. Despite considerable public interest in the artifact (which is, however, largely artificially inflated, like everything related to Ancient Egypt), the study of the disk is in fact currently blocked.

6. Dating approach, additional design details, and adjustments

It is obvious that the disk belonging to the official Sabu could only have appeared after the invention of the composition and preparation method of the artificial stone used to make it. Therefore, for accurate dating, it is necessary to determine the composition and structure of the disk's stone and then establish when the first reliably dated crafts made of artificial stone with a similar composition and structure appeared.

The ends of the disk's tongues were most likely separate attachments. The point is that synthesizing the muttering sounds most probably required some preliminary tuning (at least of two of the three tongues). The tuning was achieved by selecting the appropriate position, size, shape, and thickness of the tongue tip. The easiest way to perform such tuning is when the tips of the tongues are fabricated separately and mounted on the edges of the petals as removable attachments.

Once the tuning was completed, the attachments were apparently permanently secured with an

Copyright © 2026 R. V. Lapshin, published under CC BY

adhesive substance, making them difficult or impossible to replace afterwards. The tips of the petal-tongues were missing on the fragments of the Sabu Disk at the time of its discovery. The tongue tips visible on the disk today (see Photo. 1) were recreated by the restorers in accordance with their personal notions of the Beautiful.

7. What could have happened to the talking disk?

In the good old days, seditious speech was severely punished. Not only careless people, but also incautious objects were subject to punishment. For example, there are known cases of bells being punished for announcing unpleasant events. Depending on the severity of the guilt, the clappers and ears of the bells were torn off and smashed. The bell could be buried – literally given a funeral – broken into pieces, or ultimately killed by being melted down.

Perhaps due to seditiousness, heresy, or some secret once revealed by the simple-hearted disk, the tips of its tongues were broken off and destroyed, and the disk itself was quite beaten up. Whether the destruction of the disk was accidental or intentional is unknown, but the simple little organ fell silent forever, and the flow of revelations ceased. Apparently, our little organ whispered something very important to the official Sabu, given that he decided to take it with him to the grave.

The nimbus on the head of the statue of Christ does not produce any sounds resembling speech. First, the statue of Christ is located too high for its “speech” to be heard at all by those below. Second, according to the Tradition, Christ had a perfect command of human speech, so to make his statue “speak” inarticulately would be a sacrilege.

Used materials

1. Sabu disk, Wikipedia.
2. Disk of Sabu, 3D model by S. Youhannae, 2024.
3. R. V. Lapshin, Peruvian polygonal masonry: how, who, when and what for, 148 pp., Publishing Solutions, Moscow, 2025.
4. CT scan, Wikipedia.
5. Egyptian Museum, Cairo.
6. Structured-light 3D scanner, Wikipedia.

 Copyright © 2026 R. V. Lapshin, published under CC BY